

Service
Service
Service



Service Manual

Contents

Page

1	Technical Specifications, Connections, and Chassis Overview	2
2	Safety Instructions, Warnings, and Notes	3
3	Directions for Use	6
4	Mechanical Instructions	8
5	Service Modes, Error messages, and Repair Tips	9
6	<i>Block Diagrams</i>	
	Wiring Diagram	11
	Block Diagram	11
7	<i>Electrical Diagrams and PWB lay-outs</i>	<i>Diagram PWB</i>
	Main Board	12-16 17-18
	Control, Tuner, Speaker, and MX Panel	19
8	Electrical Alignments	21
9	Circuit Descriptions	23
	Abbreviation List (N.A.)	
	IC Data Sheets (N.A)	
10	Spare Parts List	24
11	Revision List	26

©Copyright 2003 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



1. Technical Specifications, Connections, and Chassis Overview

1.1 Technical Specifications

1.1.1 Reception

Tuning system	: PLL
Colour systems	: PAL B/G, : PAL D/K, : PAL I : SECAM B/G, : SECAM D/K, : SECAM L, : SECAM L1, : NTSC Play Back :
Sound systems	: 2CS B/G, : 2CS D/K, : AV Stereo, : NICAM B/G : (5.5-5.85), : NICAM D/K
Frequency bands	: VHF, : UHF, : S-Channel, : Hyperband
Channel selections	: 100 channels
Aerial input	: 75 ohm

1.1.2 LCD Characteristics

Type	: LCD XGA TFT
Size	: 20 inch (51 cm)
Pixel format	: 640x480 pixels

1.1.3 Optical Characteristics

Contrast ratio	: 400:1 (typ.)
Brightness	: 450 cd/m2 typ.
Viewing Angle	: 140x120 deg. (HxV)

1.1.4 Audio

Speakers	: Full range : 2 x 2 W _{rms}
----------	--

1.1.5 Miscellaneous

Power consumption

Normal operation	: 70 W
Standby	: 3 W

Power Supply

Power Adaptor

Input	: AC 95 to 264 V, 50/60 Hz
Output	: DC 12 V, 3 A

Environment

Ambient temperature	: +5 to +40 deg. C
Relative humidity	: 10% to 80% R.H.

Weight	: 9 kg
Dimension (WxHxD)	: 642x423x83 mm

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions

- Always connect the TV set via an Insulation transformer. Use a transformer of adequate power to protect the technician from injury by electrical shocks. It will also protect the TV set and its components from being damaged by accidental shorts of the circuitry, which may be occurred during the service operation.
- Replace safety components, indicated by the symbol \triangle in the Schematic diagram and Replacement parts list, only by the identical components to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- If any fuse (or Fusible resistor) in this TV set is blown, replace it as specified.
- While replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.
- Keep wires away from high voltage or high temperature parts.

2.1.1 AC Leakage Current Check

Before returning the TV set to the customer, always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage by electrical shock.

Leakage Current Cold Check (Antenna Cold Check)

1. Unplug the AC cord, and connect an electrical jumper between the two plug prongs of the AC cord.
2. Turn "on" the AC power switch (keep the AC cord unplugged!).
3. Measure the resistance value between the plug prongs of the AC cord and the metal shielding of the tuner or the aerial connection of the TV set. The measured resistance should be between 1 Mohm and 5.2 Mohm. When the metal shielding has no return path to the chassis, the measured resistance must be infinite.
4. Switch the TV set "off" and remove the electrical jumper between the two plug prongs of the AC cord.
5. Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

Leakage Current Hot Check

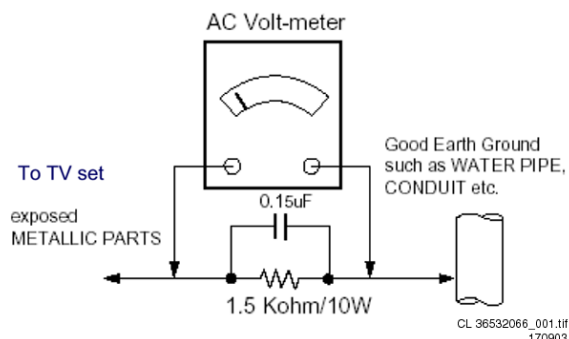


Figure 2-1 Leakage current hot check circuit

Note: Do not use a line Insulation transformer during this check.

1. Plug the AC cord directly into the AC outlet.
2. Connect 1.5 kohm/10 W resistor in parallel with a 0.15 uF capacitor between a good known earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
3. Measure the AC voltage across the resistor, using the AC voltmeter with 1000 ohm/V or higher sensitivity.
4. Plug again the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 V_{rms}, which corresponds to 0.5 mA.
5. If any measurement is out of the specified limits, there is a possibility of a shock hazard, and the set must be checked and repaired before returning to the customer.

2.2 Warnings:

Before servicing TV sets, covered by this service manual and its supplements and addenda, read and follow the Safety Instructions of this manual.

Note: If unforeseen circumstances create conflict between the following Servicing Precautions and any of the Safety Instructions of this manual, always follow the Safety Instructions. Remember: Safety First.

2.2.1 General Servicing Precautions

1. Always unplug the TV set AC power cord from the AC power source before:
 1. Removing or reinstalling any component, circuit board module, or any other receiver assembly;
 2. Disconnecting or reconnecting any TV set electrical plug or other electrical connection;
 3. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.

Caution: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result to an explosion hazard.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc), equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this TV set or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) Isopropyl alcohol (90%-99% strength).

Caution: This is a flammable mixture.
5. Unless specified otherwise in this service manual, lubrication of contacts is not required.
6. Do not defeat any plug/socket B+ voltage interlocks, with which the TV sets might be equipped.
7. Do not apply AC power to this TV set and/or any of its electrical assemblies, unless all solid-state device heat sinks are correctly installed.
8. Always connect the test TV set ground lead to the TV set chassis ground before connecting the test TV set positive lead.
9. Always remove the test TV set ground lead last.
10. Use with this TV set only the test fixtures, specified in this service manual.

Caution: Do not connect the test fixture ground strap to any heat sink in this TV set.

2.2.2 Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help to reduce the incidence of component damage, caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly, equipped with ES devices, place the assembly on a conductive surface, such as aluminium foil, to prevent electrostatic charge build-up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices, not classified as "anti-static", can generate electrical charges, sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges, sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package, until immediately before you are ready to install it. (Most replacement ES devices are packed r with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly, into which the device will be installed.
Caution: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions, when handling unpackaged replacement ES devices. (Otherwise harmless motion, such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor, can generate static electricity, sufficient to damage an ES device).

2.2.3 General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape, that will maintain tip temperature within the range of 500 deg. F to 600 deg. F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle brush (0.5 inch or 1.25cm) with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique:
 1. Allow the soldering iron tip to reach normal temperature (500 deg. F to 600 deg. F).
 2. Heat the component lead until the solder melts.
 3. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
Caution: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique:
 1. Allow the soldering iron tip to reach the normal temperature (500 deg. F to 600 deg. F).
 2. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
 3. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold there only until the solder flows onto and around of the both of the component lead and the printed circuit foil.

Caution: Work quickly to avoid overheating the circuit board printed foil.

4. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

2.3 Maintenance Instructions

2.3.1 IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong), through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC.

Removal

1. Desolder and straighten each IC lead in one operation, by gently prying up the lead with the soldering iron tip, as the solder melts.
2. Draw away the melted solder with an anti-static suction type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. It is not necessary to reapply acrylic coating to the areas.

2.3.2 "Small-Signal" Discrete Transistor Removal/ Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads, remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads, extending from the circuit board, and crimp the "U" with long nose pliers to insure metal to metal contact. Then solder each connection.

2.3.3 Power Output, Transistor Device Removal/ Replacement

1. Heat and remove all solder all around from the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert a new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace the heat sink.

2.3.4 Diode Removal/ Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and, if necessary, apply additional solder.

2.3.5 Fuse and Conventional Resistor Removal/ Replacement

1. Clip each fuse or resistor lead at the top of the circuit board hollow stake.

2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

Caution: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

2.3.6 Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections, other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
4. Carefully crimp and solder the connections.

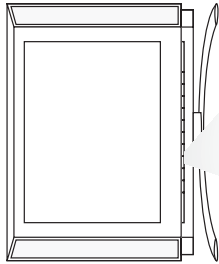
Caution: Be sure the insulated jumper wire is dressed so it does not touch components or sharp edges.

2.4 Notes

2.4.1 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are expressed in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

Personal Notes:



Should your remote control be lost or broken, you can still operate your TV with the keys in front of the TV.

ON/OFF: Press the power ON/OFF key to switch the TV on or off.

TV/VIDEO: Press repeatedly to select TV, AV or PC monitor mode.

MENU: Press repeatedly to display each menu.

OK: - Press this key to activate your choice when in the menu.
- Auto demonstration: Keep the OK key pressed for about 10 seconds. All the menus are being displayed simultaneously one after the other. To stop Auto demonstration, press any key on the front panel.

VOL + / -: Press - or + to select a menu item;

- Press - or + to adjust the volume;

- Press - or + to adjust the menu settings.

- CH PR +: Press - or + to browse through the TV channels which are not skipped;

- Press - or + to select a menu item;

- To switch the TV on from standby.

⏻: Switches the TV on from standby or off to standby. The indicator lights up brightly when the TV is in standby/dim when the TV is switched on.

4. Mechanical Instructions OLD!!!!

Notes:

- To gain access to the boards of the TV set, after removing the cover cup, unstick carefully supportive stickers.
- Place the stickers aside, adhesive side upwards.
- When you re-assemble the TV set, don't forget to put the stickers back.
- If the stickers are not adhesive anymore, you can order them by ordering number 3104 301 24501

5. Service Modes, Error Codes, and Fault Finding

5.1 General Features

Table 5-1 General Features

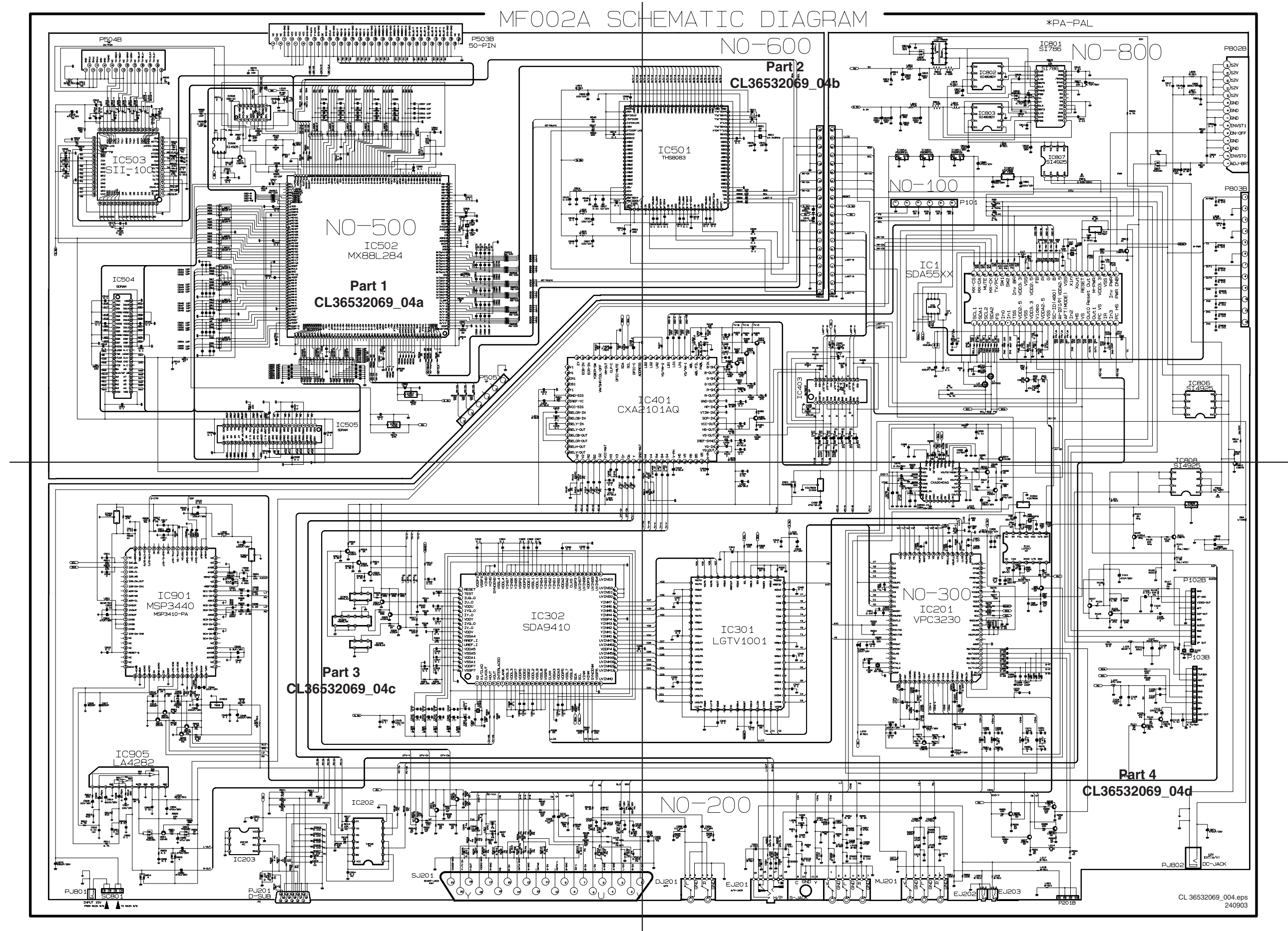
No.	Symptom	Cause	Check Point
1	No screen	Input error of inverter connector	1) Bend the pin legs of P801 connector -> recheck them 2) Check and repair the IC806, 807 SI4925, IC801 SI786, IC803 SI4808.
		P502 and Pin 21 connector being slipped out	1) Check and fix P503B connector 2) Check and fix the components at P502 LCD module and at main board. 3) Check Pin50.
		Cracked components and soldering at tuner board	1) Check and repair tuner board and main board 2) Solder Q101
2	Dark screen	1) Defective LCD lamp 2) Defective inverter 3) Input error of inverter connector	1) Replace the LCD lamp 2) Replace the inverter 2) Check the connector input
3	Defective OSD display	Defective the IC508	Check and replace the IC508

5.2 TV and External Input

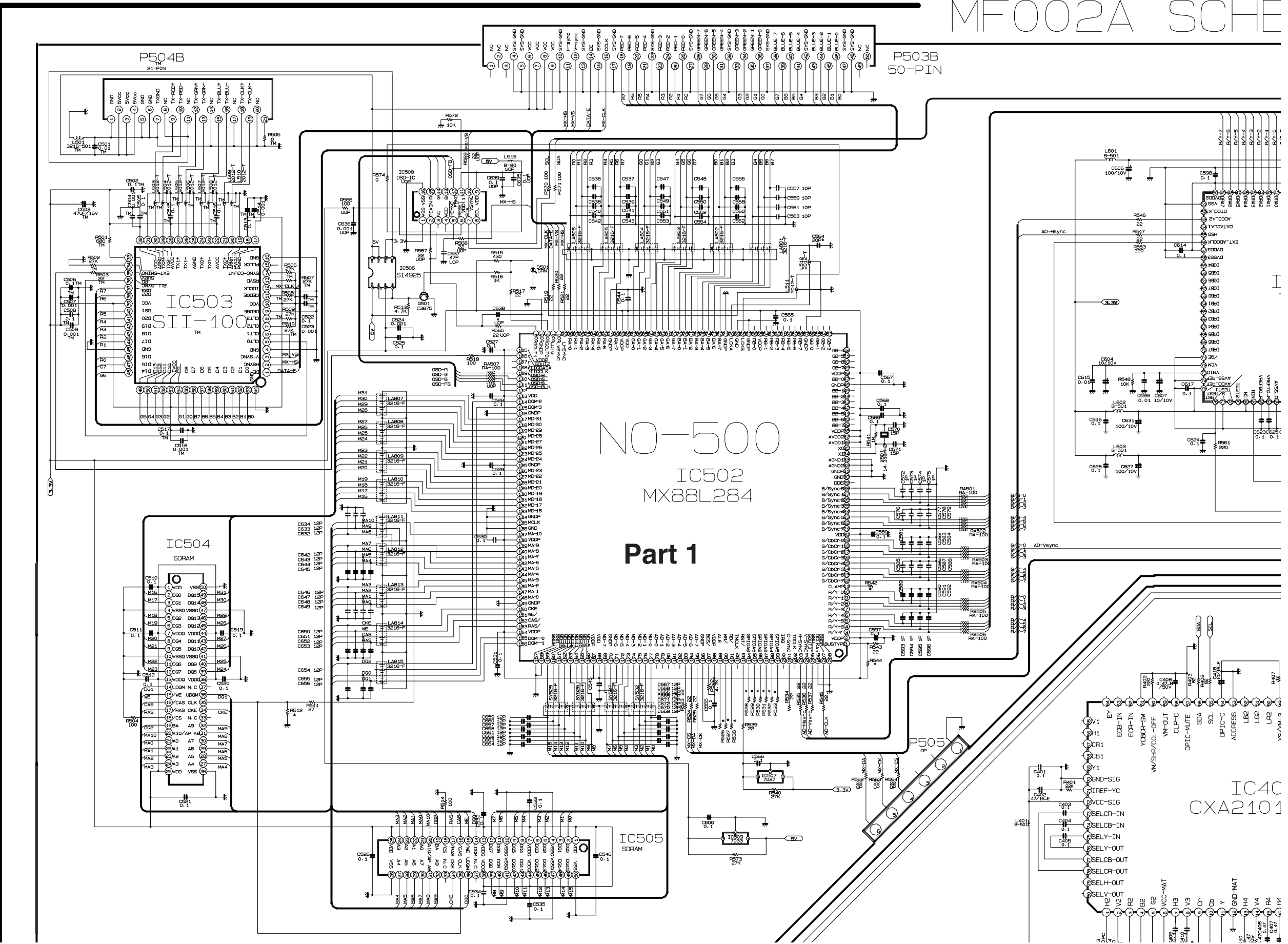
Table 5-2 TV and External Input

No.	Symptom	Cause	Check Point
4	No sound - Speaker - Earphone	Defective Reset IC of IC902 Defective MSP3410D of IC901 Defective B+ (8 V, 5 V) of ICC903, 904.	1) Check volume and speaker- Sound comes out only when being inputted into Audio L/R 2) Check after replacing IC902 3) Replace IC901 4) Check and replace B+ of IC903, 904
5	Video colour beat noise	Soldering IC201 and IC502, IC501 or masking is short	Check and re-solder
6	Video Jitter	Defective P501B Pin20 connector	Check the P501B Pin20 connector and repair

Personal Notes:



Main Board (Part 1)

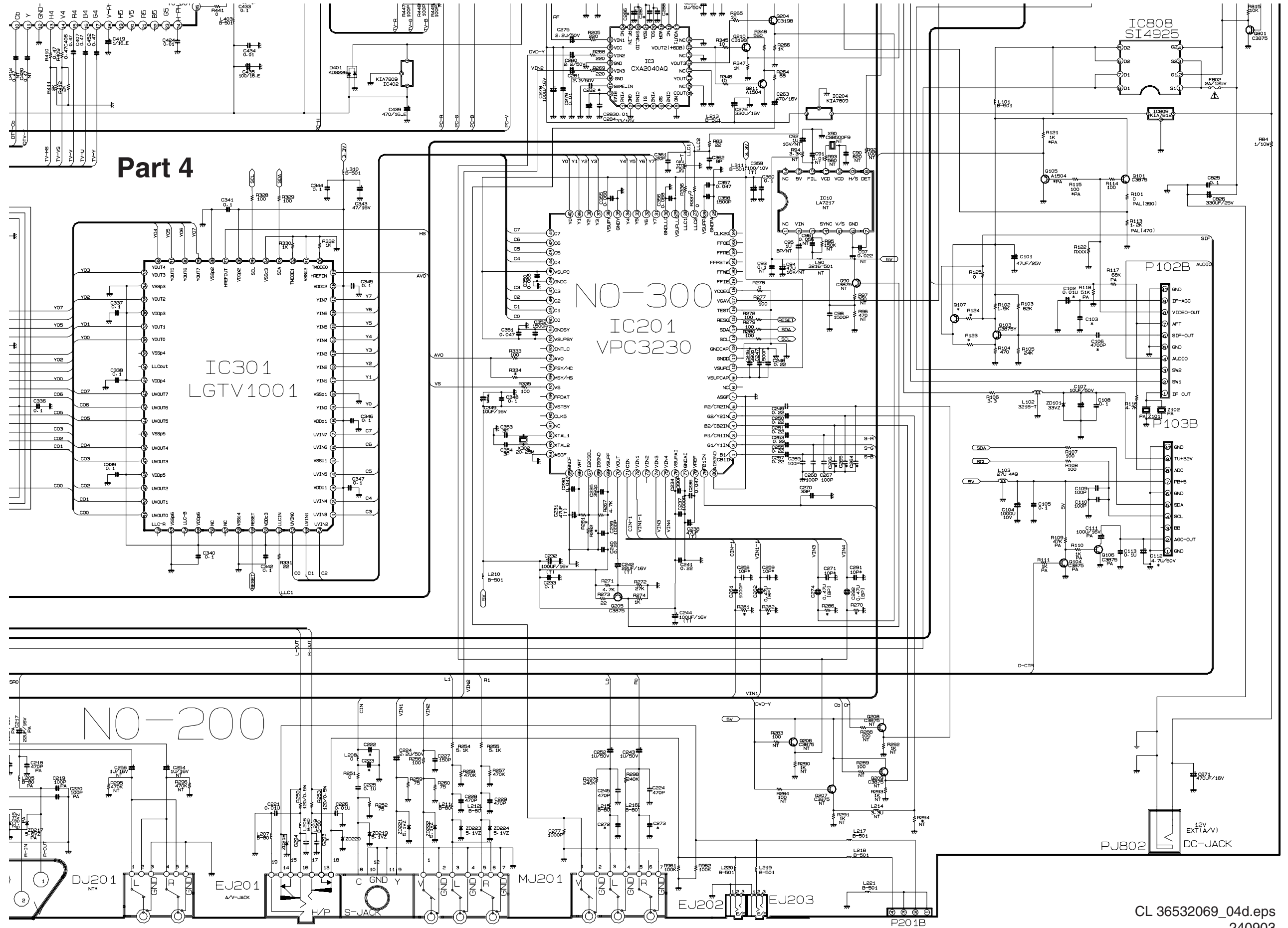


of MF-004A.



Part 2

Main Board (Part 4)

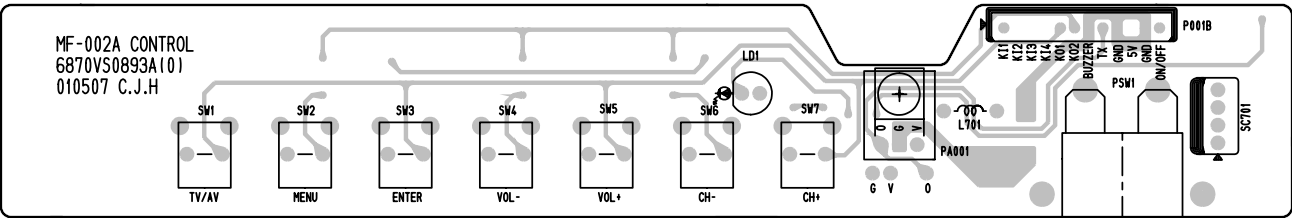


MARKING(4) - DVD JACK

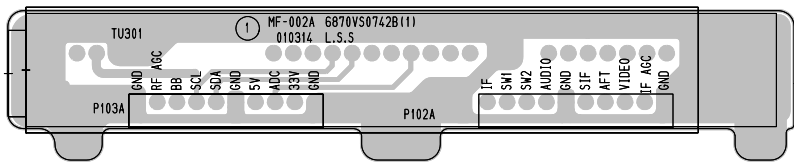
[illegible]

Control, Tuner, and Speaker Panel

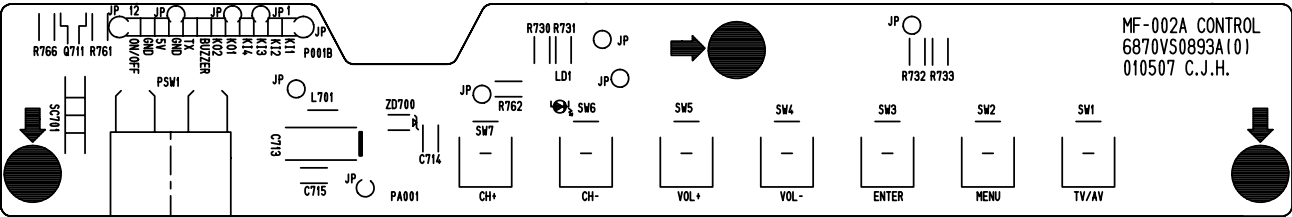
Control Panel (Top Side)



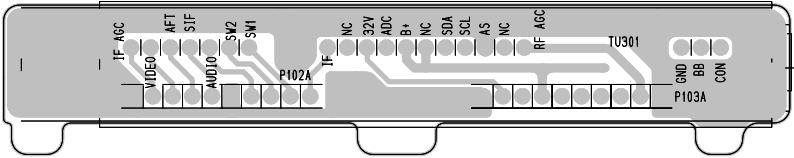
Tuner Panel (Top Side)



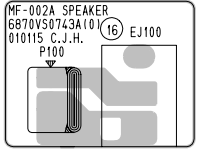
Control Panel (Bottom Side)



TunerPanel (Bottom Side)



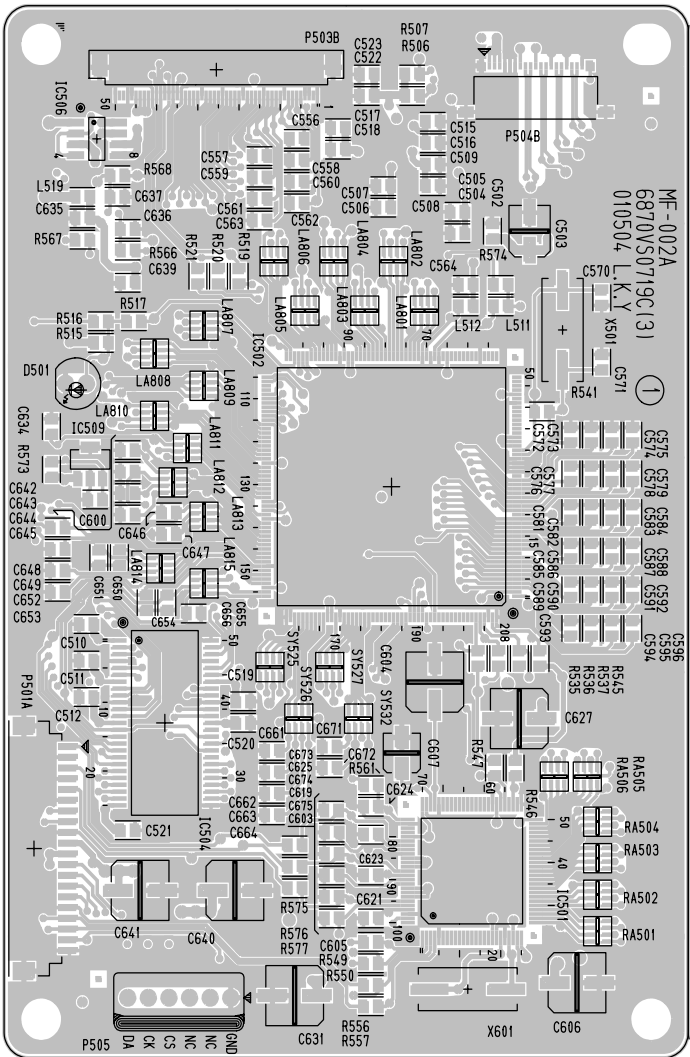
Top Panel (Top Side)



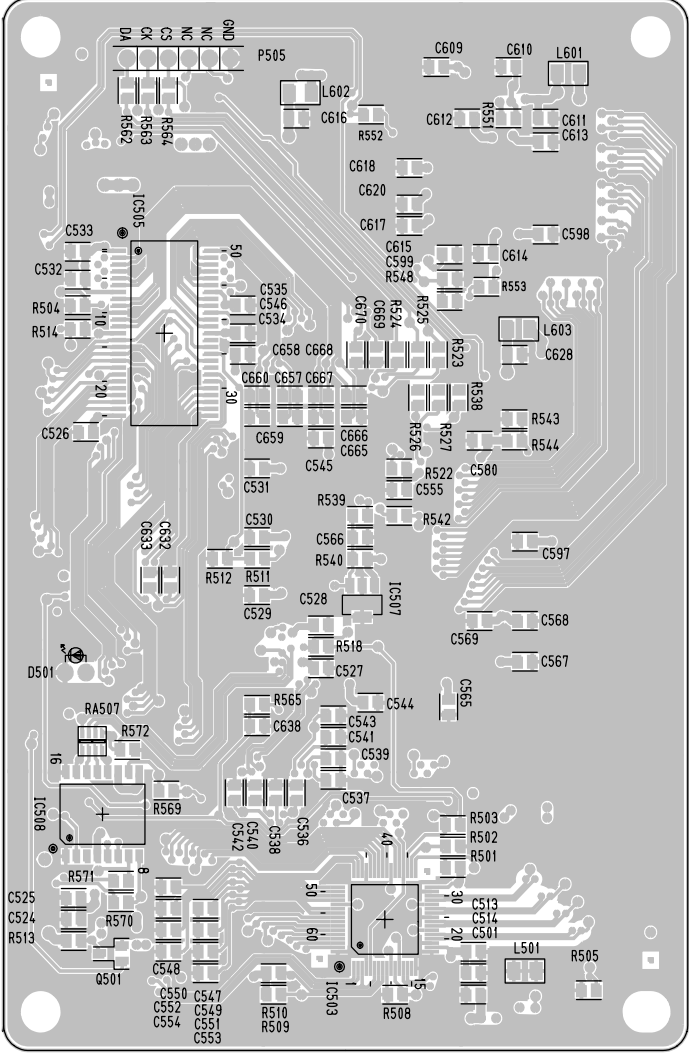
CL 36532069_007.eps
240903

MX Panel

Top Side



Bottom Side



CL 36532069_008.eps
240903

[illegible]

8. Electrical Alignments

8.1 General Alignment Conditions

Note: This set uses an adapter, so connect the adapter and the set correctly before adjustment.

Perform all electrical adjustments under the following conditions:

- Temperature and humidity conditions: 25 ± 5 deg.C / $65 \pm 10\%$ RH
- Mains voltage and frequency: 220 to 240 V / 50 Hz.
- Allow the set to warm up for approximately 30 minutes.
- Test probe: $R_i > 10$ M ohm; $C_i < 2.5$ pF.

Notes:

The "Heat Run" must be performed with the full white signal or the TV noise signal in the internal part of the set.
The time for the "Heat Run" can be changed, owing to production plan.

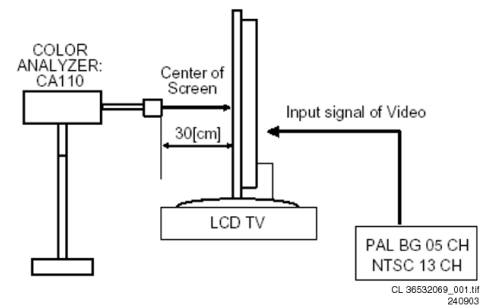


Figure 8-1 Brightness adjustment

8.2 Hardware Alignments

There are no hardware alignments foreseen for the LCD1.20E.

8.3 Software Alignments

8.3.1 Auto RGB Adjustment

Required Equipment

A service remote control (9965 000 20079) or ComPair.

Preparation for Adjustment

Receive the Digital Pattern.

Adjustment

1. Select AUTO RGB ADJ by pressing SVC key.
2. Select "A RGB" item.
3. Press the VOL+/- key to appear "OK" on the screen.

8.3.2 RGB Level Adjustment

Required Equipment

- Pattern Generator (408NPS-READER), with possible 10 STEPS.
- A service remote control (9965 000 20079) or ComPair.

Adjustment

1. Select RGB Level by pressing SVC key.
2. Adjust then until 9th and 10th STEPS are undistinguished by using VOL+/- key in R-LVL item.
3. Adjust G-LVL and B-LVL at the same way.
4. When adjustment is finished, store it by pressing the OK key. Escape it by pressing the TV/AV key.

8.3.3 Brightness Adjustment

Use it in a case when brightness adjustment is needed.

8.3.4 Default Option Adjustment

Note: This alignment is also implemented in ComPair.

1. Press the SVC key.
2. Use the SWAP/ADJUST key to find needed options or use the OP1, OP2, OP3 keys.
3. Use the PR+/- key to select the option.
4. Use the VOL+/- key to change the value.
5. Press the OK key to store settings.

Table 8-1 Default option settings

Option	Code	Function	Remark	Default value
S-B				23
FP				21
NP				89
S1VOL				105
S2VOL				105

Table 8-2 Option 1

Option	Code	Function	Remark	Default value
200PR	0	100 PROGRAM SAVE		0
	1	200 PROGRAM SAVE		
TEXT	0	Without TXT		1
	1	With TXT		
I II SA	0	No Save DUAL SOUND Condition		0
	1	Save DUAL SOUND Condition		
TOP	0	FLOF TEXT		1
	1	TOP TEXT		
SCART	0	DVD JACK		1
	1	SCART JACK		
A2 ST	0	NICAM CHECK		1
	1	NICAM and FM Stereo		
SYS	0	B/G, I, D/K		0 (EU), 1 (Fr)
	1	B/G, L/L		
	2	B/G, I, D/K, M		
	3	Reserved		

Table 8-3 Option 2

Option	Code	Function	Remark	Default value
ACMS	0	Without ACMS function	Australia	1
	1	With ACMS function		
VOL	0	Normal Volume Curve		0
	1	Rushed Volume Curve		
BBACK	0	Without Blue Back		0
	1	With Blue Back		
LANG	0	English only	English	6
	1	English + EU4	(1)	
	2	English + other EU	(2)	
	3	Farsi	English, Farsi	
	4	Arab + Urdu	(3)	
	5	English + China	English, China	
	6	Reserved		
	7	Reserved		

(1) English, German, French, Italian, Spanish.

(2) English, Dutch, Swedish, Norwegian, Danish, Swiss, Portuguese, Romanian, Polish, Hungarian, Czech, Russian.

(3) English, French, Arab, Urdu.

Table 8-4 Option 2

Option	Code	Function	Remark	Default value
KEY	0	LOCAL KEY (20A20 MODEL)		
	1	LOCAL KEY (20LA30 MODEL)		
TSS	0	Without TURBO SEARCH function		0
	1	With TURBO SEARCH function		
PANEL	0	LCD Panel option		0
	1	Reserved		
IICT	0	Tuning with AFT Voltage		0
	1	Tuning with ADC of IF IC		
INVT	0	INVERTER option		0
	1	Reserved		
MD SA	0	Without LAST MODE SAVE		0
	1	With LAST MODE SAVE		
MONO	0	Without Forced MONO sound system		0
	1	With Forced MONO sound system		
CH+AU	0	Without D/K CHINA or BB system		0
	1	With D/K CHINA or BB system		



Option	Code	Function	Remark	Default value
T-LANG	0	West Europe	Teletext Language	0
	1	East Europe		
	2	Turkey		
	3	Czech/Hungary		
	4	Cyrillic 1		
	5	Cyrillic 2		
	6	Cyrillic 3		
	7	Turkey/Greek 1		
	8	Turkey/Greek 2		
	9	Turkey/Greek 3		
	10	Arab/France		
	11	Arab/English		
	12	Arab/Hebrew 1		
	13	Arab/Hebrew 2		
	14	Farsi/English		
	15	Farsi/France		
	16	Farsi all		

9. Circuit Descriptions, List of Abbreviations, and IC Data Sheets

Not Applicable

10. Spare Parts List

LC1.20E			— —			C910		
Various						C914		
00A1	9965 000 14322	DFU	C1001	9965 000 16429	100µF 10V	9965 000 16555	0.022µF	100V
00A2	9965 000 14330	RC25109/01	C1002	9965 000 16430	0.01µF 80% 50V	9965 000 16556	100µF	25V
00A3	9965 000 14329	Adapter RF CAM-1550	C101	9965 000 16536	47µF 25V	9965 000 16432	100µF	16V
00A4	9965 000 14331	Audio cable 2m	C104	9965 000 16537	1000µF 10V	C92	9965 000 16542	1µF 50V
0112	9965 000 16522	LC201V1-A1	C107	9965 000 16434	10µF 50V	C922	9965 000 16431	10µF 16V
0120	9965 000 16523	Loudspeaker	C111	9965 000 16432	100µF 16V	C926	9965 000 16432	100µF 16V
		C080L30K145X 5W/7W	C112	9965 000 16435	4.7µF 50V	C927	9965 000 16546	100µF 16V
0121	9965 000 16524	Tweeter C050D10K1452	C112	9965 000 16441	22µF 16V	C928	9965 000 16554	2.2µF 50V
0174	9965 000 14327	Mains cord for M2511A-001 EUR	C205	9965 000 16432	100µF 16V	C930	9965 000 16546	100µF 16V
			C206	9965 000 16438	220µF 16V	C932	9965 000 16439	220000pF 16V 0805
0174	9965 000 16412	Mains cord MP5004	C211	9965 000 16441	22µF 16V	C933	9965 000 16439	220000pF 16V 0805
0300	9965 000 16525	Cabinet	C217	9965 000 16441	22µF 16V	C935	9965 000 16431	10µF 16V
0310	9965 000 16526	Push buttons (7x)	C240	9965 000 16439	220000pF 16V 0805	C936	9965 000 16439	220000pF 16V 0805
0320	9965 000 16527	Coil	C241	9965 000 16439	220000pF 16V 0805	C937	9965 000 16439	220000pF 16V 0805
0330	9965 000 16528	Mains knob	C243	9965 000 16435	4.7µF 50V	C938	9965 000 16439	220000pF 16V 0805
0400	9965 000 16529	Rear cover	C248	9965 000 16439	220000pF 16V 0805	C94	9965 000 16433	47µF 16V
0401	9965 000 16591	Cover A/V	C249	9965 000 16439	220000pF 16V 0805	C940	9965 000 16439	220000pF 16V 0805
0410	9965 000 14325	Stand 20"	C250	9965 000 16439	220000pF 16V 0805	C943	9965 000 16445	3.3µF 50V
0520	9965 000 16531	Main board -/12S	C251	9965 000 16439	220000pF 16V 0805	C944	9965 000 16431	10µF 16V
0520	9965 000 16592	Main board -/19S	C252	9965 000 16435	4.7µF 50V	C945	9965 000 16444	470µF 16V
0530	9965 000 16532	MX panel	C253	9965 000 16439	220000pF 16V 0805	C95	9965 000 16547	1µF 50V
0540	9965 000 16533	Control panel	C255	9965 000 16439	220000pF 16V 0805	C951	9965 000 16555	0.022µF 100V
0570	9965 000 16534	Inverter 15V	C257	9965 000 16439	220000pF 16V 0805	C954	9965 000 16557	470µF 25V
0580	9965 000 16535	Tuner MF-002A EU	C262	9965 000 16538	0.47µF 50V SMD	C955	9965 000 16545	47µF 50V
0580	9965 000 16593	Tuner MF-002A FR	C263	9965 000 16539	220µF 25V	C959	9965 000 16557	470µF 25V
FB801	9965 000 16454	Filter HH-1M3216-501 1206	C274	9965 000 16538	0.47µF 50V SMD	C960	9965 000 16557	470µF 25V
FB802	9965 000 16454	Filter HH-1M3216-501 1206	C275	9965 000 16435	4.7µF 50V	—WW—		
P1001	9965 000 16580	Cable 12P 450mm	C276	9965 000 16540	330µF 16V	R1001	9965 000 16498	4.7k 5% 1/6W
P1002	9965 000 16581	Cable 4P 450mm	C278	9965 000 16432	100µF 16V	R1003	9965 000 16499	1.2k 5% 1/6W
P501	9965 000 20582	Cable P501A-P501B	C280	9965 000 16435	4.7µF 50V	R1004	9965 000 16500	330Ω 5% 1/6W
P502	9965 000 20604	Cable P503B	C281	9965 000 16435	4.7µF 50V	R1006	9965 000 16498	4.7k 5% 1/6W
P503	9965 000 20604	Cable P503B	C284	9965 000 16541	33µF 16V	R1007	9965 000 16498	4.7k 5% 1/6W
P802	9965 000 20605	Cable P802B	C289	9965 000 16542	1µF 50V	R1008	9965 000 16498	4.7k 5% 1/6W
PA1001	9965 000 16493	TSOP2238MQ1	C343	9965 000 16433	47µF 16V	R1009	9965 000 16498	4.7k 5% 1/6W
PJ801	9965 000 16582	4P Power jack	C349	9965 000 16431	10µF 16V	R1010	9965 000 16498	4.7k 5% 1/6W
S001	9965 000 16530	20" VESA PLATE	C402	9965 000 16433	47µF 16V	R1011	9965 000 16498	4.7k 5% 1/6W
S002	9965 000 14332	VGA cable 7M	C408	9965 000 16543	0.47µF 50V	R250	9965 000 16501	120Ω 5% 1/2W
S030	9965 000 20079	Service RC	C417	9965 000 16433	47µF 16V	R253	9965 000 16501	120Ω 5% 1/2W
S031	3104 301 24501	Conductive sticker 50X35	C418	9965 000 16431	10µF 16V	R321	9965 000 16583	22k 1% 1/6W
SJ201	9965 000 16479	Socket scart	C418	9965 000 16544	10µF 16V	R322	9965 000 16584	56k 1% 1/6W
SW1001	9965 000 16502	SDKLA11100	C419	9965 000 16542	1µF 50V	R932	9965 000 16585	5.6Ω 5% 2W
SW1002	9965 000 16503	Tact switch	C422	9965 000 16543	0.47µF 50V	RA501	9965 000 16586	100Ω 5%
		SKHV17910B	C423	9965 000 16431	10µF 16V	RA502	9965 000 16586	100Ω 5%
SW1003	9965 000 16503	Tact switch	C423	9965 000 16544	10µF 16V	RA503	9965 000 16586	100Ω 5%
		SKHV17910B	C431	9965 000 16545	47µF 50V	RA504	9965 000 16586	100Ω 5%
SW1004	9965 000 16503	Tact switch	C435	9965 000 16546	100µF 16V	RA505	9965 000 16586	100Ω 5%
		SKHV17910B	C438	9965 000 16547	1µF 50V	RA506	9965 000 16586	100Ω 5%
SW1005	9965 000 16503	Tact switch	C439	9965 000 16548	470µF16V	RA507	9965 000 16489	Filter 3216 4S600
		SKHV17910B	C443	9965 000 16547	1µF 50V	~~~~~		
SW1006	9965 000 16503	Tact switch	C445	9965 000 16547	1µF 50V	L1	9965 000 16497	2N7000TA
		SKHV17910B	C5	9965 000 16546	100µF 16V	L1001	9965 000 16482	22µH 2.3 X 3.4
SW1007	9965 000 16503	Tact switch	C604	9965 000 16549	100µF 16V SMD	L101	9965 000 16454	Filter HH-1M3216-501 1206
		SKHV17910B	C606	9965 000 16549	100µF 16V SMD	L102	9965 000 16454	Filter HH-1M3216-501 1206
SW1008	9965 000 16503	Tact switch	C607	9965 000 16550	10µF 25V SMD	L103	9965 000 16577	27µH 4.0 X 10.5
		SKHV17910B	C627	9965 000 16549	100µF 16V SMD	L2	9965 000 16497	2N7000TA
		SKHV17910B	C631	9965 000 16549	100µF 16V SMD	L201	9965 000 16485	12µH 2.3 X 3.4
		SKHV17910B	C640	9965 000 16551	220µF 6.3V SMD	L202	9965 000 16483	Filter HB-1M2012-800JT 0805
		SKHV17910B	C641	9965 000 16551	220µF 6.3V SMD	L203	9965 000 16483	Filter HB-1M2012-800JT 0805
SY302	9965 000 16587	Filter TH355LSK-K5214	C7	9965 000 16432	100µF 16V	L204	9965 000 16483	Filter HB-1M2012-800JT 0805
SY525	9965 000 16489	Filter 3216 4S600	C7	9965 000 16546	100µF 16V	L205	9965 000 16483	Filter HB-1M2012-800JT 0805
SY526	9965 000 16489	Filter 3216 4S600	C801	9965 000 16545	47µF 50V	L207	9965 000 16484	Filter HB-1S2012-080JT 0805
SY527	9965 000 16489	Filter 3216 4S600	C802	9965 000 16432	100µF 16V	L209	9965 000 16484	Filter HB-1S2012-080JT 0805
SY532	9965 000 16489	Filter 3216 4S600	C802	9965 000 16546	100µF 16V	L210	9965 000 16454	Filter HH-1M3216-501 1206
TU301	9965 000 16507	Tuner TAFC-M130D	C803	9965 000 16548	470µF16V	L211	9965 000 16484	Filter HB-1S2012-080JT 0805
TU301	9965 000 16521	Tuner TAFC-S120D	C804	9965 000 16548	470µF16V	L212	9965 000 16484	Filter HB-1S2012-080JT 0805
X1	9965 000 16508	Crystal 6 MHz HC49U	C805	9965 000 16548	470µF16V	L213	9965 000 16454	Filter HH-1M3216-501 1206
X301	9965 000 16588	Filter 27 MHz HC49U	C806	9965 000 16548	470µF16V	L214	9965 000 16578	3.3µH 2.3 X 3.4
X302	9965 000 16509	Crystal 20.250 MHz HC49U	C807	9965 000 16552	220µF 25V	L215	9965 000 16484	Filter HB-1S2012-080JT 0805
			C812	9965 000 16552	220µF 25V	L216	9965 000 16484	Filter HB-1S2012-080JT 0805
X501	9965 000 16510	Crystal 14.318MHz	C814	9965 000 16435	4.7µF 50V			
X601	9965 000 16510	Crystal 14.318MHz	C816	9965 000 16448	100µF 25V			
X90	9965 000 16511	Crystal 500kHz CSB500F9	C819	9965 000 16431	10µF 16V			
			C820	9965 000 16539	220µF 25V			
X901	9965 000 16512	Crystal 18.432 MHz HC49U	C826	9965 000 16553	330µF 25V			
			C827	9965 000 16548	470µF16V			
Z101	9965 000 16505	Filter MKT40.4MA110P-TF01	C828	9965 000 16548	470µF16V			
			C871	9965 000 16444	470µF 16V			
Z101	9965 000 16520	Filter MKT41.4MA110P-TF01	C872	9965 000 16553	330µF 25V			
			C880	9965 000 16548	470µF16V			
Z102	9965 000 16504	Filter MKT40.4MA110P-TF0	C881	9965 000 16432	100µF 16V			
			C881	9965 000 16546	100µF 16V			
ZD101	9965 000 16589	HZT33	C882	9965 000 16539	220µF 25V			
			C882	9965 000 16552	220µF 25V			
			C904	9965 000 16545	47µF 50V			
			C908	9965 000 16546	100µF 16V			
			C909	9965 000 16554	2.2µF 50V			

L217	9965 000 16454	Filter HH-1M3216-501 1206	D902	9965 000 16452	KDS181
L218	9965 000 16454	Filter HH-1M3216-501 1206			
L219	9965 000 16454	Filter HH-1M3216-501 1206			
L220	9965 000 16454	Filter HH-1M3216-501 1206			
L221	9965 000 16454	Filter HH-1M3216-501 1206			
L305	9965 000 16454	Filter HH-1M3216-501 1206	IC1	9965 000 16560	SDA555XF
L306	9965 000 16454	Filter HH-1M3216-501 1206	IC10	9965 000 16459	LA7217M
L307	9965 000 16454	Filter HH-1M3216-501 1206	IC2	9965 000 16456	AT24C16-10PC-2.7
L308	9965 000 16454	Filter HH-1M3216-501 1206	IC201	9965 000 16561	VPC3230D QA
L309	9965 000 16454	Filter HH-1M3216-501 1206	IC204	9965 000 16562	KIA7809API
L310	9965 000 16454	Filter HH-1M3216-501 1206	IC3	9965 000 16563	CXA2040AQ
L311	9965 000 16454	Filter HH-1M3216-501 1206	IC301	9965 000 16564	LGTV1001
L312	9965 000 16484	Filter HB-1S2012-080JT 0805	IC302	9965 000 16565	SDA9410
L401	9965 000 16454	Filter HH-1M3216-501 1206	IC303	9965 000 16566	Filter SMD H354LAI- K5206
L402	9965 000 16454	Filter HH-1M3216-501 1206	IC305	9965 000 16566	Filter SMD H354LAI- K5206
L403	9965 000 16454	Filter HH-1M3216-501 1206	IC4	9965 000 16458	KA75270Z
L511	9965 000 16484	Filter HB-1S2012-080JT 0805	IC401	9965 000 16567	CXA2101AQ
L512	9965 000 16484	Filter HB-1S2012-080JT 0805	IC402	9965 000 16568	PQ09RD21
L519	9965 000 16483	Filter HB-1M2012-800JT 0805	IC501	9965 000 16569	THS8083
L601	9965 000 16454	Filter HH-1M3216-501 1206	IC502	9965 000 16570	MX88L284-V
L602	9965 000 16454	Filter HH-1M3216-501 1206	IC505	9965 000 16468	K4S161622D-TC80
L603	9965 000 16454	Filter HH-1M3216-501 1206	IC506	9965 000 16474	SI4925DY
L801	9965 000 16488	26µH	IC507	9965 000 16571	KIA7027AF
L802	9965 000 16488	26µH	IC508	9965 000 16469	SC786107DWR2
L803	9965 000 16454	Filter HH-1M3216-501 1206	IC509	9965 000 16572	KIA7033AF
L804	9965 000 16487	9.5µH	IC801	9965 000 16475	SI786
L805	9965 000 16454	Filter HH-1M3216-501 1206	IC802	9965 000 16573	SI4808DY
L806	9965 000 16454	Filter HH-1M3216-501 1206	IC803	9965 000 16573	SI4808DY
L807	9965 000 16454	Filter HH-1M3216-501 1206	IC806	9965 000 16474	SI4925DY
L90	9965 000 16454	Filter HH-1M3216-501 1206	IC807	9965 000 16474	SI4925DY
L901	9965 000 16454	Filter HH-1M3216-501 1206	IC808	9965 000 16474	SI4925DY
L902	9965 000 16454	Filter HH-1M3216-501 1206	IC809	9965 000 16574	KIA7812API
L903	9965 000 16454	Filter HH-1M3216-501 1206	IC850	9965 000 16568	PQ09RD21
L910	9965 000 16454	Filter HH-1M3216-501 1206	IC851	9965 000 16457	PQ3RF23
LA801	9965 000 16489	Filter 3216 4S600	IC852	9965 000 16575	KIA78L05BP
LA802	9965 000 16489	Filter 3216 4S600	IC854	9965 000 16576	PQ12RF21
LA803	9965 000 16489	Filter 3216 4S600	IC854	9965 000 16594	PQ12RD21
LA804	9965 000 16489	Filter 3216 4S600	IC901	9965 000 16472	MSP3410D-QA-C5
LA805	9965 000 16489	Filter 3216 4S600	IC902	9965 000 16572	KIA7033AF
LA806	9965 000 16489	Filter 3216 4S600	IC903	9965 000 16461	KIA7808API
LA811	9965 000 16489	Filter 3216 4S600	IC904	4822 209 16128	KIA7805PI
LA812	9965 000 16489	Filter 3216 4S600	IC905	4822 209 31855	LA4282
LA813	9965 000 16489	Filter 3216 4S600	Q1001	9965 000 16494	KTA-1266
LA814	9965 000 16489	Filter 3216 4S600	Q101	9965 000 16495	2SC3875S
LA815	9965 000 16489	Filter 3216 4S600	Q103	9965 000 16495	2SC3875S
LD1001	9965 000 16490	LED assy	Q104	9965 000 16495	2SC3875S
T801	9965 000 16506	Transformer 13-Z320UH DC-DC	Q105	9965 000 16496	2SA1504S
			Q106	9965 000 16495	2SC3875S
D1	9965 000 16452	KDS181	Q107	9965 000 16496	2SA1504S
D801	9965 000 16558	SM3411 (DL-11S2GN1) Y-Green	Q201	9965 000 16495	2SC3875S
D802	9965 000 16559	SR3411 (DL-11S2RN1) Red	Q202	9965 000 16495	2SC3875S
D804	9965 000 16451	EU1ZV(1)	Q203	9965 000 16495	2SC3875S
D804	9965 000 16452	KDS181	Q204	9965 000 16495	2SC3875S
D805	9965 000 16452	KDS181	Q205	9965 000 16495	2SC3875S
D806	9965 000 16452	KDS181	Q206	9965 000 16495	2SC3875S
D807	9965 000 16452	KDS181	Q207	9965 000 16495	2SC3875S
D901	9965 000 16452	KDS181	Q208	9965 000 16495	2SC3875S
			Q209	9965 000 16495	2SC3875S
			Q210	9965 000 16495	2SC3875S
			Q211	9965 000 16496	2SA1504S
			Q301	9965 000 16496	2SA1504S
			Q302	9965 000 16496	2SA1504S
			Q303	9965 000 16496	2SA1504S
			Q304	9965 000 16496	2SA1504S
			Q305	9965 000 16496	2SA1504S
			Q306	9965 000 16496	2SA1504S
			Q401	9965 000 16496	2SA1504S
			Q402	9965 000 16496	2SA1504S
			Q403	9965 000 16496	2SA1504S
			Q404	9965 000 16495	2SC3875S
			Q460	9965 000 16495	2SC3875S
			Q50	9965 000 16495	2SC3875S
			Q501	9965 000 16495	2SC3875S
			Q801	9965 000 16495	2SC3875S
			Q90	9965 000 16495	2SC3875S
			Q901	9965 000 16496	2SA1504S
			Q902	9965 000 16496	2SA1504S
			Q903	9965 000 16496	2SA1504S
			Q904	9965 000 16496	2SA1504S
			Q905	9965 000 16496	2SA1504S
			EJ201	9965 000 16480	Socket SHVS
			MJ201	9965 000 16579	PJ6054P

11. Revision list

11.1 Manual 3122 785 12521

1. Wiring diagram is added.
2. Adjustment instruction is corrected.
3. Parts list is corrected